

Section I. Project Title and Project Purpose Statement

Title: Restoring communities through phytoremediation of lead on post-demolition residential sites

This project is focused on addressing an environmental justice issue in Warren, Ohio (44485, 44481, and 44483) that is related to the large number of demolition sites being at risk for significant lead (Pb) contamination in the soils. The goals of the project are 1) to demonstrate, on a small scale, cost-effective and environmentally friendly soil remediation approaches based on the use of plant material which can be easily adopted by the community and 2) to engage the community in the education and implementation of these approaches on a wider scale. This project fits within the scope of the environmental justice collaborative problem solving program as it is focused on the priority pollutant Pb and its presence as a soil contaminant and directly addresses the following environmental statute: Solid Waste Disposal Act-section 8001(a) which is related to the research, investigations, experiments, training and demonstration projects related to solid waste.

The project is a collaborative effort that is being led by the Trumbull Neighborhood Partnership and joined by project partners from Youngstown State University, Trumbull County Land Reutilization Corporation, and Warren City.

Section II. Environmental and/or Public Health Information about the Affected Community

Vacant residential lots in the neighborhoods of Warren, Ohio have a high probability of containing elevated levels of lead due to significant recent demolition efforts to reduce blight in an aged housing stock. In the planning process for the Moving Ohio Forward demolition program multiple target areas throughout the city were developed based upon concentration of blighted and abandoned housing stock. These target areas reveal the high concentration of demolition in Warren's poorest neighborhoods, the number one target area has a median household income of \$16,130 and 50.6% of families live below poverty level.

The top five target neighborhoods are far below the state average of college graduates (9%) with only one of the five neighborhoods registering any statistically measurable number of graduates – a low 1.8%. Access to healthcare is limited as well, all but one of the five neighborhoods have a higher than state average of uninsured (11.6%) and three of those neighborhoods have rates above 15%. Crime rates in Warren are above the state average significantly. Poverty crimes occur at a rate of 555.4 per 100,000 persons in Warren, however the state average is 266.5.

Likewise the violent crime rate is 365.1 in Warren and 214 in Ohio. (City-Data.com)

Aside from socioeconomic struggles, these neighborhoods have a high rate of demolition due to vacant and abandoned property. Demolition rates in these neighborhoods range between 6 and 12 percent, where demolition rates in the majority of Warren's other neighborhoods range between 0 and 2 percent. (TNP HUD CC Data) Within the previous four months alone these neighborhoods have seen 37 demolitions with another 153 slated to be demolished in 2015/2016 in these neighborhoods alone.

At the same time, the homes in these neighborhoods are part of an aged housing stock. Homes constructed prior to 1960, which represent 62.5% of Warren's housing stock, have the highest risk of containing lead. (ACS 2012) Homes constructed prior to 1978 often contained lead as well and in Warren 26.65% of the housing stock was constructed between 1960 and 1979, meaning altogether 89.1% of homes in Warren, Ohio are likely to contain lead. In these target

neighborhoods the median year for home construction range between 1939 and 1959. When these properties are demolished, residual lead dust manifests as a soil contaminant and is likely to be present in the soil on the remaining site.

The result of this extensive demolition is significant vacant open residential land throughout the city, an inadvertent opportunity for residential land to be repurposed as recreational, beautification, and food production sites. Standard reuse options typically include side yard expansion, community gardens and other food production sites, pocket parks and passive park spaces, and rain gardens. These uses, often ideal for neighborhoods, are nonetheless all negatively impacted by the potential presence of lead in the soil. The proposed project is designed to address contamination of post demolition lots in order to ensure that the future reuse of the land is not affected by lead quantities remaining after demolition. Phytoremediation is a low cost method of correcting soil contamination after the fact. The majority, if not all, of the demolition of homes in these neighborhoods did not include lead abatement or lead safe demolition practices, meaning many of the lots are highly likely to include lead contamination in the soil and are in need of treatment before the lots can safely be repurposed by neighboring residents.

Section III. Organization's Historical Connection to the Affected Community

TNP was launched in 2010 as a collaboration between the Raymond John Wean Foundation, City of Warren, and key residents, grassroots leaders, and community stakeholders with the purpose of improving the quality of life in Warren's neighborhoods. Initial efforts were made to reduce blight through community clean-ups and vacant housing board-ups, and to reduce growing food insecurity by developing community gardens and food production sites. TNP has expanded the framework of its activity through several key partnerships to include neighborhood level urban planning, community outreach around neighborhood revitalization, and the disposition of vacant land and residential structures through demolition, renovation, and land use. TNP is a 501c3 non-profit governed by a board of directors made up of residents and stakeholders, and operating in partnership with local government, neighborhood associations, and additional stakeholders.

TNP is well integrated with the local residents on all levels of the public health issue described in this application. TNP, with resident input, assisted the city of Warren in targeting demolition funding for MOF and NIP programs. TNP also engages residents on post demolition land use opportunities – especially those land reuse strategies that are most likely to be affected by post-demolition lead contamination such as yard expansion and community gardening.

TNP has significant experience in community outreach and engagement and in neighborhood level planning. In 2011, TNP was awarded a Community Challenge Grant through the US Department of Housing and Urban Development which allocated over \$397,076 for the purposes of planning and zoning strategies throughout Warren's neighborhoods. This work began with a citywide residential parcel survey and provides recommendations for implementation of repurposing activities around land and structural vacancy. The core of the project is community outreach. TNP continues to hold public meetings in neighborhoods seeking resident input for the development of neighborhood level plans. The first drafts of the neighborhood plans are being compiled now and will undergo extensive community review before the slated completion date of May 2015.

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In 2012 and in partnership with the Trumbull County Land Reutilization Corporation (TCLRC), TNP helped the city of Warren leverage its \$500,000 pledge to the Ohio Attorney General's Moving Ohio Forward Program into a total of \$2.1 million in funding for the demolition of derelict vacant structures, by way of developing a targeted demolition strategy informed by public input. Members of the Warren Neighborhood Leadership Council (WNLC) worked with TNP and the Mahoning Valley Organizing Collaborative (MVOC) to advocate for a maximum match towards the Moving Ohio Forward Program, and pushed city officials to implement a demolition strategy. The WNLC is a representative organization of the 11 neighborhood associations organized throughout the city of Warren. MVOC is a community organizing collaborative designed to develop and strengthen resident leaders in the Mahoning Valley. The foundation laid by this process allowed TNP and the TCLRC to successfully apply for \$3.2 million in demolition funding from the Neighborhood Initiative Program.

TNP's partnership with resident driven efforts and entities throughout the city have allowed continuous input and engagement opportunities at all levels of programming. This high level of outreach underscores the philosophy and intention of TNP, which is that all programming should be informed by extensive public outreach. For example, TNP is contracted with the Trumbull County Land Reutilization Corporation (Land Bank) for acquisition and disposition management of residential properties in Trumbull County. For each parcel in the Land Bank, TNP staff makes efforts to contact adjoining property owners seeking their input and/or interest in the property. Much of the property consists of post-demolition side lots that are typically purchased by adjacent property owners for yard expansion. Additionally, through its contract with TNP, the TCLRC has held over 20 residential lots for the purpose of hosting public land reutilization projects free of charge, and has partnered with grass roots groups to pursue land use projects county wide. Many of these reuse projects become community gardens, passive parks, or public art pieces.

Section IV. Project Description

i) A concise description of the activities

Local environmental results that the project is seeking to achieve-

The projected outcome of this project includes the demonstration of practical and cost-effective phytoremediation approaches that can be implemented at the community level to reclaim Pb-contaminated soils at post-demolition sites.

How this project will achieve these results and how the community will benefit-

This project is focused on successfully demonstrating phytoremediation methods for treating soil Pb contamination in order to promote environmental justice in Warren. Once these methods are shown to be effective, the community can utilize the methods and benefit directly through the removal of a serious environmental hazard. Successful remediation will dramatically reduce environmental risks to the community by reducing or eliminating exposures via direct contact and dust inhalations that are especially dangerous to children. Additional benefits to the community include the elimination of urban blight and reclamation of abandoned sites that can be used for urban agriculture, recreation or be redeveloped as new housing sites.

How the organization's efforts will increase community's capacity to address local environmental, public health issues-

The development of practical and cost effective remediation strategies that can be implemented and maintained by residents will significantly increase the community's ability to address this important environmental problem. This will be facilitated by another tangible outcome of the

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project, which is that the flyer and workshop/mini-symposium that will be provided to the community and can be made available to other communities facing the same challenges.

How the project is related to the environmental statutes

The proposed project is designed to address contamination of soil on post demolition sites where a home containing lead based paint was demolished – Solid Waste Disposal Act. Specifically this project will address methods to eliminated the effect of this contamination, with an emphasis on geographic areas of concentrated demolition and poverty.

ii) A concise description of how the organization and its partner(s) will work together during the year to address the local issue(s).

The role of your partner(s) in addressing the local environmental, public health and community climate resiliency (if applicable) issue(s);

Trumbull Neighborhood Partnership will facilitate identifying sites and engaging the local community on the project. Trumbull Neighborhood Partnership will organize and perform site preparations, and site maintenance. TNP also will provide access to people who can provide manual labor at the sites, gardening at the sites, site maintenance, and will also work with YSU on the preparation of the phytoremediation flyer and a workshop/mini-symposium on phytoremediation.

YSU personnel will design and execute the plan for testing of the plants and treatment conditions. During the study, YSU will also perform sampling, sample analysis, data analysis, and will work with Trumbull Neighborhood Partnership on the flyer and workshop/mini-symposium.

The TCLRC is anticipated to have ownership of the majority of test lots, or at minimum be in the process of obtaining ownership via tax foreclosure. Lots will be pulled from the demolition lists from the previous 2-10 years through out the city – the majority of which demolitions were the result of abandonment of the structure. Frequently these lots enter the land bank (TCLRC) due to delinquent property taxes.

The nature of the organization(s), and what resources they bring to the partnership;

Trumbull Neighborhood Partnership is a 501-c3 nonprofit community development corporation for the city of Warren, Ohio and its surrounding neighborhoods. Primarily focused on neighborhood level community development, TNP is experienced in community engagement and outreach, planning, urban agriculture, housing rehabilitation, and demolition. TNP will serve as the primary administrator for the project, will organize all outreach, assist in site selection and non-technical site work, and oversee the partnerships as they relate to this program.

YSU is an urban research university in northeast Ohio that will bring scientific and technical capabilities necessary for the project. YSU will provide faculty and students with the necessary expertise from the departments of biology and chemistry as well as research resources including state of the art methods and instrumentation that will be important to the performance of the experimental portion of the overall project.

The TCLRC is more commonly known as the Trumbull County Land Bank. The TCLRC will assist the main partners in the identification of available post-demolition lots that are suitable for the terms of this project. The TCLRC will provide access to the selected lots and assist in outreach and community engagement.

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How the partner(s) has a vested interest in working with this partnership [other than just getting income], commitments made, and specific activities it will be responsible for; and

The applicant and partners are engaged in long term planning for the implementation and expansion of remediation activities in Warren, Youngstown, and surrounding communities. Abandoned homes and demolition sites are a continuing problem in the region that needs to be addressed in a way that enables communities to implement the solutions themselves. Significant community involvement in the remediation activities is expected to increase the probability that remediation of these abandoned sites will be effective.

TNP, the TCLRC, and Warren City are intimately tied with the viability of the land in this community and with the health and welfare of the residents. As a regional partner, YSU has a substantial interest in addressing this problem as it directly affects surrounding communities including those where students, faculty and their families live and work. All four partners recognize that this issue is widespread, particularly in Rust Belt cities where aging housing stocks are being torn down en masse and vacant land reuse strategies are prolific but require a healthy soil base.

How the applicant plans to maintain and sustain the partnerships.

Demolition resources are increasingly being allocated with expanded parameters that include post-demolition site use. Establishment of site specific successes and a general template of best practices will allow for TNP and its partners to capitalize on additional grant funding, REO contributions from banks, and other programming resources to assist residents in addressing soil quality issues immediately following the demolition of derelict vacant structures. The establishment of sites and a template for use will also represent a working laboratory for future academic and other partners to further pursue development and research of best practices.

iii) Scope of work

Like many cities, Warren, Ohio has a large number of home sites that have been or soon will be demolished. Due to the ages of the homes, it is likely that many of the homes contain lead (Pb)-based paints, which causes significant contamination of soil around the homes. A recent report found soil Pb levels in Appleton, WI as high as 32,483 µg/g for homes built before 1960 compared to 755 µg/g for homes built after 1960 which are high compared to US EPA soil limits of 400 µg/g for play areas and 1200 µg/g for other areas of the yard (Clark and Knudsen, 2013). By comparison, initial measurements performed at a potential test location in Warren, Ohio indicate that soil Pb concentrations range from 0 to approximately 3000 µg/g and an average value of about 370 µg/g. Furthermore, it is not apparent that any measures are undertaken to limit contamination by element during or after the demolition process. The effects of soil contamination by Pb in urban areas often have a disproportionate effect on older and low-income neighborhoods and therefore can be seen as an environmental justice issue (McClintock, 2012). Lead contamination is an especially serious environmental hazard for children and limits the use of post-demolition sites until the soils are adequately remediated.

The goals of this project are to address the local issue of Pb soil contamination at home demolition sites by demonstrating cost-effective and environmentally friendly soil remediation methods based on plants and to engage the community in adopting these approaches on a wider scale. The specific goals of the project are: 1-To demonstrate a reduction in soil Pb concentrations at post-demolition sites by phytoextraction and 2- To provide the information gathered in this study in writing and also through a workshop/mini-symposium format to the local community and other interested parties seeking to remediate similar contaminated sites.

Background information on phytoremediation:

Treatment of highly contaminated soils often requires the excavation and treatment or disposal of the soil at a hazardous waste landfill, however the cost of these procedures is high making them impractical for most sites. On the other hand, bioremediation approaches are alternatives that can be performed at lower cost and are more environmentally appealing. Phytoremediation, the use of plants to clean up polluted sites, has been widely applied in the bioremediation of organic and metal contaminants (Schnoor et al. 1997; Watanabe, 1997). There are different ways that plants can be used to clean up soils including phytoextraction, phytostabilization, and phytovolatilization processes. Since plants cannot degrade metals (i.e. Pb) directly, the most viable option is phytoextraction where the pollutant is transferred from the soil to the plant tissue for removal. The contaminant is often concentrated in the plant and is effectively removed from the soil by harvesting the plant.

Choice of plants-

Reports of phytoremediation investigations indicate there are several plants that are good candidates for phytoremediation of Pb, including geraniums (Mahdiah et al 2013), corn and peas (Huang et al. 1997), alfalfa (Lopez et al. 2005), Indian mustard and sunflowers (Lin et al. 2009, Rahman et al. 2013). The latter two have been used successfully in phytoextraction strategies. In one report, Indian mustard was shown to efficiently remove Pb when chelating agents, as soil-additives, were added (Blaylock et al. 1997). A recent review of plants used for phytoremediation of toxic metals reported that Indian mustard and sunflowers can accumulate up to 100 µg/g and 60 µg/g of Pb, respectively (Tangahu et al. 2011). Although Indian mustard is able to accumulate higher plant concentrations of Pb, the use of sunflowers is also effective because the plants produce large amounts of biomass which acts as a reservoir and facilitates removal of the extracted Pb (Adesodun et al 2010). In this study, we will investigate the use of Indian mustard and sunflowers in the remediation of Pb at post demolitions urban sites. Both plants have been reported to have good uptake of Pb and both are expected to be compatible with the regional climate and soil.

Chelating agent-

The use of chelating agents has been reported as a means for increasing the removal efficiency of Pb by phytoremediation approaches (Huang et al. 1997, Blaylock et al. 1997, Liu et al. 2007, Hadi et al. 2010). Chelating agents increase the solubility and mobility of metals in soils making them more available to plants and increases metal transport from the roots into the above ground plant tissues. When the chelating agent EDTA was added to soils containing 600 mg/kg Pb, Indian mustard accumulated up to 1.5% of Pb in plant shoots (Blaylock et al. 1997). EDTA also increased Pb mobilization and accumulation of Pb in plant tissues of sunflowers (Lin et al. 2009; Seth et al. 2011). Although EDTA increases phytoextraction efficiency, it is a synthetic compound that is not biodegradable and can contribute to increased mobilization of other toxic elements that could cause contamination of groundwater or other environmental problems. For this reason, there is interest in identifying other chelating compounds that provide enhancements in phytoextraction efficiency but that are also biodegradable. An alternative compound shown to be an efficient chelating agent is N-(2-Hydroxyethyl)ethylenediamine- N,N',N'-triacetic acid trisodium salt (EDDS), which is similar in structure to EDTA but is also biodegradable (Niiane et al. 2008). In the proposed studies, we will investigate the use of Indian mustard and sunflowers in combination with and without EDDS to determine its utility for enhancing Pb uptake by the plants.

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iv) Project activities and work plan:

The main activities in this project include the identification of home demolition sites having Pb-contaminated soils, set up of the sites for performing phytoremediation experiments, and testing of different treatments for their utility for removing Pb from contaminated soils. During the project, Trumbull Neighborhood Partnership will partner with YSU and the TCLRC in identifying sites likely to be contaminated with Pb in the Warren area and assist in choosing the sites for implementation of the phytoremediation strategy. One site in Warren, Ohio that is under preliminary investigation has shown soil Pb concentrations range from 0 to approximately 3000 µg/g. All on site activities at this and other test sites will be performed under the joint supervision of TNP and YSU personnel. These activities include site preparation, site maintenance, and collection of soil and plant samples.

The specific technical objective of this study is to demonstrate whether the phytoremediation approaches used in this study are effective in decreasing the concentration of Pb in contaminated soils by measuring Pb concentrations in the plants and soils undergoing treatment. The initial part of the project will focus on identifying sites appropriate for demonstrating the phytoremediation approach. Approximately 10 sites will be used in the study in order to demonstrate the approach for various locations and conditions. Sites will be selected based on home age (older, newer), soil characteristics and levels of Pb contamination (higher, lower). Once sites have been identified, soil and plant samples will be collected for analysis to establish the initial conditions prior to any other activities, including the introduction of remediation treatments. Samples of the soils and selected existing plants (if present) will be tested for Pb.

A baseline of soil parameters including measurements of soil pH, moisture, nitrogen, phosphorus, potassium, and organic matter content will be performed followed by site selection. Once sites have been selected (based on their baseline parameters) site preparation including boundary limits, tilling of the soils, and removal of weeds and other plants will be conducted. Following site preparation, soil samples will be collected again to verify the soil conditions and Pb concentrations immediately prior to introducing any treatments. The overall test design will investigate the effects of plants and the chelating agent on the effectiveness of phytoremediation for removing Pb. During the test period, each site will be divided into plots that are similar in size and composition so that comparison testing can be performed. The introduced plants will be grown and samples of the soils and plants will be collected over time to monitor soil characteristics and the Pb concentrations in the soils and plants.

During the project, two plants (Indian mustard and sunflower) and the chelating agent (EDDS) will be tested on three selected high Pb contaminated sites as shown in Table 1. Plots that are 3m x 3m in size will be set up for each treatment. On each plot either 12 Indian mustard or 6 sunflower seedlings will be planted. Soil Pb concentration, Pb uptake by plant tissues, soil pH, soil moisture and organic matter content will be monitored every 4 weeks. The table below shows the different test conditions that will be used during this phase of the project.

| Sunflowers | | Indian mustard | | Soil only | |
|------------|--------|----------------|--------|-----------|--------|
| + EDDS | - EDDS | + EDDS | - EDDS | + EDDS | - EDDS |

Soil pH, soil moisture and soil organic content will be measured according to standard methods. Nitrogen, phosphorus, and potassium (N/P/K) levels will be determined by ion chromatography (IC). Measurements of Pb in soil and plant samples will utilize the EPA method for microwave assisted acid extractions of the samples (EPA Method 3051A) followed by measurements using

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inductively coupled plasma-mass spectrometry (ICP-MS). All ICP MS measurements will be performed using the method of calibration curves with certified standard solutions. Accuracy of the ICP MS measurements will be confirmed using standard reference materials. All instruments and laboratory facilities needed for the proposed work are currently available at YSU. The YSU faculty have the necessary experience to perform these analyses and are able to train others including students in performing these analyses also.

Following is a timeline of the activities to be performed in this project:

Months 0-3

Sites will be identified and prepared for experimentation.

Work will begin at the sites.

Plants (seedlings), chemicals, and reagents will be purchased.

Soil samples will be collected to establish baseline data (soil parameters, N/P/K, Pb) and plant growth at the test sites will be initiated.

Months 3-6

This time period will include part of the main growing season of the early summer months.

During this phase, the sites will be monitored regularly to observe soil and plant conditions.

Test sites will be maintained and monitored regularly.

Soil and plant samples collected biweekly for measurements (soil parameters, N/P/K, Pb).

A progress report on the first six months will be submitted at the end of this part of the project.

Work will commence on putting together a phytoremediation flyer for distribution at the end of the project and also a workshop/mini-symposium on phytoremediation.

Months 6-9

This time period will include part of the main growing season of late summer and early fall.

During this phase, the sites will be monitored regularly to observe soil and plant conditions.

Test sites will be maintained and monitored regularly.

Soil and plant samples collected biweekly for measurements (soil parameters, N/P/K, Pb).

Months 9-12

This time period will include the fall/winter season with low plant growth.

Test sites will be maintained and monitored regularly.

Soil and plant samples collected monthly for measurements (soil parameters, N/P/K, Pb).

At the end of the test period, a final report will be submitted reviewing the data and outcomes of the project.

The phytoremediation flyer will be finalized for distribution and a workshop/mini-symposium on on phytoremediation will be held for informing the community and interested parties about the approach.

D. Results:

The results of the studies are anticipated to show that the combination of these plants and chelating agent can be used to successfully treat Pb contaminations at post-demolition sites. Specifically the results will show that initial Pb concentrations in the soils have been reduced and that Pb is translocated into plant tissues where it can be measured. Measurements performed over time are expected to demonstrate the typical rate at which Pb can be removed and what the characteristic time scales are for site remediation by these approaches in the Warren community. The results of the Pb measurements will be used to evaluate the relative effectiveness of the different plant/chelator combinations.

Section V. Organizational Capacity and Programmatic Capability

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TNP is in the final months of the implementation of a federal HUD Community Challenge Grant. (U.S. HUD Office of Sustainable Communities - Community Challenge Planning Grant (Grant No. CCPOH0064-11 Point of contact at HUD is Stephen Cerny, Senior Policy Advisor.) This grant was awarded to Warren City, with TNP as a sub-recipient. This grant for \$397,076 has a three-year grant period. Warren City is tasked with the final reporting and fiscal management of this report, while TNP is tasked with adhering to all HUD reporting requirements both fiscally and in work progress. TNP works directly with HUD on the implementation on a regular basis. This has proven to be a positive and effective partnership.

TNP's accounting is managed by a third party certified public accountant. The contracted CPA utilizes QuickBooks to manage funds received and expended through TNP. TNP administers all funding from an internal system (Excel) to serve as tracking and as a check against the work completed by the CPA. TNP's annual budget exceeds \$400,000 and is diversely supported primarily by foundational grants, federal, state, and local grants, and service contracts. TNP has extensive and diverse experience in the management of procured funds from a variety of sources, most with differing expenditure and reporting requirements. TNP has administered funds awarded as a lump sum, in regular disbursement intervals, and in reimbursable programs. TNP has a current staff of nine full time positions,

Section VI. Qualifications of the Project Manager (PM)

The Program Manager, Matt Martin, has over 8 years experience in community driven land re-use projects, including the successful management of The New Hope Soil Remediation Project, a phytoremediation project in Cleveland's Stockyards Neighborhood in 2009. The project was a collaboration with a faculty and students from The Ohio State University and was funded through Neighborhood Progress, Inc.'s ReImagining Cleveland Program, and involved the use of several phytoremediation techniques across several garden sites that had previously tested high for levels of lead. Mr. Martin was also the manager of another ReImagining Cleveland Project in the Stockyards, a native plant site developed in partnership with the W.48th Street Block Club and the Earth Day Coalition's Naturehood Program.

Matt Martin has been with TNP since it's launch in 2010, first as the Program Director and now as Executive Director. In this time TNP has established itself as both a strong partner to grassroots neighborhood revitalization efforts and a high capacity community development entity able to effectively partner with government, philanthropy, and business collaborators. Mr. Martin has overseen the implementation of a large number of community driven land repurposing efforts including TNP's adoption of the GROW program, creation of a Side Lot Program, and partnership on the "gregg's garden" effort to install wildflowers and native plants in Warren's Central city. In addition, Mr. Martin has helped catalyze TNP's role in Warren's revitalization by establishing partnerships with the Trumbull County Land Bank, City of Warren, US Dept of Housing and Urban Development, and Warren Municipal Courts. These efforts have helped to galvanize TNP's role as a high capacity community level service organization.

Mr. Martin, a trained Community Organizer, has been involved with a number of grassroots partnerships in his time at TNP including the Warren Neighborhood Leadership Council, Resident Advisory Council, and the Warren Community Challenge. These efforts have deliberately kept the organization connected to the residents it serves and ensured that community outreach and neighborhood feedback remain a key element of TNP's effort in the community.

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Section VII. Past Performance in Reporting on Outputs and Outcomes

Trumbull Neighborhood Partnership is a sub-recipient of a U.S. HUD Office of Sustainable Communities - Community Challenge Planning Grant (Grant No. CCPOH0064-11) for \$397,076. Point of contact at HUD is Stephen Cerny, Senior Policy Advisor, U.S. Department of Housing and Urban Development, Office of Sustainable Housing and Communities, 451 Seventh St. SW Room 10180, Washington DC 20410, 202-402-5097. Point of contact for Warren City is Michael Keys, Director, Community Development, 418 Main Avenue SW, Suite 201, Warren, Ohio 44481 (330) 841-2595.

This grant is currently ongoing, with progress documented through monthly reports in which activities are recorded, as well as in semi-annual reports in which TNP is asked to provide a narrative report on progress for each of the major tasks identified in the Work Plan submitted at the beginning of the grant period. A logic model is also submitted with the semi-annual reports. TNP's work plan outlined 6 major tasks: Parcel Inventory, Community Engagement and Participation, Vacant Structures and Land Bank Utilization, Vacant Land Reutilization, Zoning, and Policy Priorities. TNP also provides an estimation of the percentage of completion for each major task.

Through the logic model TNP documents how its services and activities match up with the goals established by HUD and how those services and activities will match up to the anticipated outcomes. Outcomes reported through the logic model will include number of people engaged in the planning process, the number of properties returned to productive use through planning for vacant structures and land bank utilization, and the number of properties returned to productive use through vacant land reutilization. Additionally, TNP has provided HUD with copies of completed and draft legislation to address zoning issues, and reports on partnerships used to address policy priorities.

TNP has submitted monthly progress reports every month since the grant period began in February of 2012. TNP submitted semi-annual reports in August of 2012, January of 2013, August of 2013, January of 2014, and August of 2014. Additionally, TNP reports quantitative data through a logic model during each semi-annual report. The logic model was first submitted in August of 2012, then in January of 2013, and August of 2014, January of 2014, and August of 2014. All reports are given to Lori Lemasters at the City of Warren Community Development department, financial reports are added by the City, and from there all documents are uploaded to the Grants Management System. These reports are reviewed and approved by the Grants Technical Representative and Grant Officer with the Office of Sustainable Housing and Communities.

Section VIII. Quality Assurance Project Plan

If the project is awarded, a complete quality assurance project plan (QAPP) will be developed to insure that environmental data collected during the study meets US EPA requirements according to the guidance in the document EPA QA/G-5. The elements of the QAPP will include detailed procedures for (i) the collection, storage, preparation and analysis of soil and plant tissue samples collected from the test sites, (ii) the calibration of the analytical methods and sample measurements using the methods including the use of certified analytical standards, field and laboratory blanks, and standard reference materials to verify and quantify the accuracy of the sample measurements, and (iii) the documentation, treatment and storage of sample data.

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